

"EXPRESS MAIL" Mailing Label No. EL820908445US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Erol Tan et al. ) RAY4066P0016US  
)  
Serial No.: Not Yet Designated )  
(Divisional of Serial No. 09/341,340 ) Group Art Unit:  
) Not Yet Designated  
Filed: Concurrently Herewith )  
)  
For: SOFT, STRONG, ABSORBENT )  
MATERIAL FOR USE IN )  
ABSORBENT ARTICLES )  
)  
Examiner: Christopher C. Pratt )

FIRST PRELIMINARY AMENDMENT

Commissioner For Patents  
Washington, D.C. 20231

Sir:

In accordance with Rule 115 of the Rules of Practice, applicants hereby amend their above-identified application before the first substantive examination as follows:

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 1, line 5 with the following re-written paragraph:

--This application is a divisional of U.S. Patent Application Serial No. 09/341,340, filed July 8, 1999 under 35 U.S.C. §371 as a national stage of international application No. PCT/US98/00639 filed January 15, 1998 which is a continuation-in-part application of United States Patent Application Serial No.

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08/948,987 filed October 10, 1997, now U.S. Patent No. 5,916,670, issued June 29, 1999, which itself is a continuation-in-part application of United States Patent Application Serial No. 08/784,536 filed January 17, 1997 now U.S. Patent No. 5,866,242, issued February 2, 1999. The disclosures of all three applications are incorporated herein by reference.--

In the application as originally filed, please replace the paragraph beginning at page 5, line 2, with the following re-written paragraph:

--In one aspect, the present invention provides an absorbent material having a basis weight of from about 200 g/m<sup>2</sup> to about 400 g/m<sup>2</sup>, a density of from about 0.35 g/cc to about 0.40 g/cc and a ratio of Gurley Stiffness (mg) to density (g/cc) of less than about 3700. The material is airlaid as a bottom layer of pulp, a middle layer of pulp and superabsorbent material disposed in amongst the pulp, and a top layer of pulp. The pulp preferably has a Kappa value of less than about 100. In one embodiment, the absorbent material includes from about 40 weight percent to about 90 weight percent cellulosic fibers and from about 10 weight percent to about 60 weight percent superabsorbent material. Such absorbent material has a water content of less than about 10 weight percent, a density of greater than about 0.25 g/cc, a ratio of Gurley Stiffness (mg) to density (g/cc) of less than about 3700 and a pad integrity of greater than about 12 Newtons.--

In the application as originally filed, please replace the paragraph beginning at page 24, line 5, with the following re-written paragraph:

--Additional studies were performed using a 400 g/m<sup>2</sup> basis weight, 0.40 g/cc density, 40 weight percent superabsorbent material of the present invention (C11, C12 and C13) and the absorbent cores from commercially available Huggies® and Pampers® diapers; and commercial roll goods from Buckeye Absorbent Products (Delta, British Columbia, Canada)(Zorb Core Thermal Bond Product Code 44500) and Concert Fabrication LTEE (Thurso, Quebec, Canada)(Concert Product Code 280). The results of those studies are summarized below in Table 3.--

In the application as originally filed, please replace the paragraph beginning at page 27, line 24 and extending to the end of Table 7 at line 32 of page 28, with the following re-written paragraph:

--45 Degree wicking absorption was determined using the procedures of Example 2. The following groups of samples were tested: (a) absorptive material of the present invention with a basis weight of about 400 g/m<sup>2</sup>, a density of about 0.4 g/cc, and varying superabsorbent material contents of about 15 weight percent (Sample C11), 28 weight percent (C12), 39 weight percent (C1) or 42 weight percent (C13); (b) thermal bonded air-laid fluff obtained from Concert Fabrication LTEE (Concert Fabrication LTEE Product Codes 500, 280, 130) or Buckeye Absorbent Products (Zorb Core Thermal Bond Product Code 44500); the absorbent core removed from a Huggies® Diaper; and the absorbent core removed from a Pampers® diaper.

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Samples C11, C12 and C13 were made using 100 percent cold caustic treated fibers.

Sample C1 was made using a blend of 50 percent cold caustic treated fibers and 50 percent non-cold caustic treated fibers. For each sample, the amount of fluid

absorbed per gram of sample was plotted against distance from the origin (source of fluid). A representative plot is shown in FIG. 5. The area under the curve was calculated using the following formula:

$[(y_1)(x_2 - x_1) + 0.5 (y_2 - y_1)(x_2 - x_1) + (y_2)(x_3 - x_2) + 0.5 (y_3 - y_2)(x_3 - x_2) + \dots + (y_n)(x_n - x_{n-1}) + 0.5 (y_n - y_{n-1})(x_n - x_{n-1})]$ , where  $X_i$  is distance at the  $i^{\text{th}}$  inch and  $Y_i$  is absorbency at the  $i^{\text{th}}$  inch.

This area was then multiplied by the gravitational constant ( $981 \text{ cm/s}^2$ ) and the sine of  $45^\circ$  to result in the work value of ergs/g. The derived energy value was normalized for superabsorbent material by dividing by percent superabsorbent material (%SAP) content. The results of these studies are summarized below in Table 7.

| Table 7       |       |                               |                                    |                |
|---------------|-------|-------------------------------|------------------------------------|----------------|
| Sample        | % SAP | Total Wicking Energy (ergs/g) | Normalized Wicking Energy (ergs/g) | Density (g/cc) |
| C 1           | 39    | 161,299                       | 4,136                              | 0.38           |
| C 11          | 15    | 143,295                       | 9,553                              | 0.36           |
| C 12          | 28    | 152,509                       | 5,447                              | 0.36           |
| C 13          | 42    | 162,200                       | 3,862                              | 0.38           |
| Concert 500   | 45    | 93,016                        | 2,067                              | 0.12           |
| Concert 280   | 30    | 67,216                        | 2,241                              | 0.17           |
| Concert 130   | 18    | 56,219                        | 3,123                              | 0.13           |
| Buckeye 44500 | 40    | 62,094                        | 1,552                              | 0.17           |
| Huggies®      | 36    | 133,889                       | 3,719                              | 0.15           |
| Pampers®      | 42    | 112,870                       | 2,625                              | 0.12           |

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In the application as originally filed, please replace the Table 9 at page 31,  
between lines 6 and 21, with the following re-written Table 9:

**--Table 9  
Suppleness**

| <u>Sample</u> |  | <u>% SAP</u> | <u>Suppleness</u>  | <u>Density</u> |
|---------------|--|--------------|--------------------|----------------|
|               |  |              | (g <sup>-1</sup> ) | (g/cc)         |
| C1            |  | 39           | 0.74               | 0.38           |
| C11           |  | 15           | 0.792              | 0.36           |
| C12           |  | 28           | 0.898              | 0.36           |
| C13           |  | 42           | 1.235              | 0.38           |
| Concert 500   |  | 45           | 0.612              | 0.12           |
| Concert 280   |  | 30           | 1.429              | 0.17           |
| Buckeye 44500 |  | 40           | 0.374              | 0.17           |
| Huggies®      |  | 36           | 0.890              | 0.15           |
| Pampers®      |  | 42           | 0.727              | 0.12           |

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In the application as originally filed, please replace the heading "**Example 11**"  
at page 33, line 1, with the following heading: **--Example 10--**.

**IN THE CLAIMS:**

Please cancel claims 1-11, 15-17, 19, 20, 22-24, 26-29, 33, 36-38, 40-44, 46,  
47, 49, and 50.

Please amend claim 13 as follows:

13. (Amended) The material of claim 12 that has normalized drying power  
energy of at least about 6000 ergs/g.

Please amend claim 14 has been amended as follows:

14. (Amended) The material of claim 12 at has normalized wicking energy of at least about 3000 ergs/g.

Please amend claim 18 has been amended as follows:

18. (Amended) The material of claim 12 wherein the cellulosic fibers have a relative crystallinity of less than about 60 percent.

Please amend claim 21 has been amended as follows:

21. (Amended) The material of claim 12 wherein at least some of the cellulosic fibers are obtained from pulp having a Kappa value of less than about 75.

Please amend claim 25 has been amended as follows:

25. (Amended) The material of claim 12 wherein at least some of the cellulosic fibers have been made by a process that includes the step of treating a liquid suspension of pulp at a temperature of from about 15°C to about 60°C with an aqueous alkali metal salt solution having an alkali metal salt concentration of from about 2 weight percent to about 25 weight percent of said solution for a period of time ranging from about 5 minutes to about 60 minutes.

Please amend claim 30 as follows:

30. (Amended) The material of claim 12 having a basis weight of from about 100 g/m<sup>2</sup> to about 250 g/m<sup>2</sup>.

Please amend claim 31 as follows:

31. (Amended) The material of claim 12 having a basis weight of from about 350 g/m<sup>2</sup> to about 450 g/m<sup>2</sup>.

Please amend claim 32 as follows:

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32. (Amended) The material of claim 12 having a density of from about 0.30 to about 0.45 g/cc.

Please amend claim 34 as follows:

34. (Amended) The material of claim 12 that contains from about 20 to about 40 weight percent superabsorbent material.

Please amend claim 35 as follows:

35. (Amended) The material of claim 12 that has normalized drying power energy of at least 7000 ergs/g.

Please amend claim 39 as follows:

39. (Amended) The material of claim 12 that has normalized wicking energy of at least 3500 ergs/g.

Please amend claim 45 as follows:

45. (Amended) The material of claim 12 that has a suppleness of greater than about 0.8 g<sup>-1</sup>.

Please amend claim 48 as follows:

48. (Amended) An absorbent article comprising the absorbent material of claim 12.

**REMARKS**

Claims 1-11, 15-17, 19, 20, 22-24, 26-29, 33, 36-38, 40-44, 46, 47, 49, and 50 have been canceled.

No claims have been canceled or amended by this First Preliminary Amendment for purposes related to patentability.

Claims 12-14, 18, 21, 25, 30-32, 34-35, 39, 45, and 48 remain in this application.

A typographical error in the units for the basis weights listed in line 2 on page 5 has been corrected from "g/cm<sup>2</sup>" to --g/m<sup>2</sup>--. This does not constitute new matter. The error is obvious, and the correction is supported by the application as originally filed because the error occurs in the "Summary" section, whereas the originally filed detailed description, at page 16, lines 10-15, correctly describes the various preferred embodiment ranges with units of g/m<sup>2</sup>, not g/cm<sup>2</sup>. The correct units of g/m<sup>2</sup> are used throughout the detailed description (e.g., page 19, lines 28-30, page 20, page 21, et seq.). Other claims (e.g., claims 7, 16, 30, and 31) correctly use the g/m<sup>2</sup> units.

In order to introduce the international application Rule 34 Amendments into the U.S. national stage application, various amendments have been made. In particular, the specification has been amended at page 24 to (1) replace the reference to "Merfin" with "Buckeye," a company which purchased the Merfin Company, (2) more particularly identify the prior art Buckeye product, and (3) more particularly identify the Concert entity and its product.

Page 27 has been amended to (1) set forth the Concert entity with more particularity, (2) set forth the Concert products with more particularity, and (3) replace the "Merfin" company with its purchaser, Buckeye Absorbent Products, and (4) set forth the Buckeye product with more particularity.

Page 28 has been amended to delete the "Merfin" entity and replace it with its purchaser "Buckeye."



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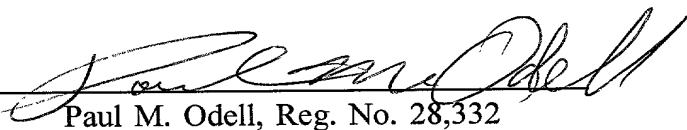
These amendments to the specification with respect to the prior art product designations and manufacturer names do not go beyond the disclosure of the invention per se in the international application as originally filed, and do not constitute new matter.

Attached hereto is a marked up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**"

Applicant respectfully requests that a timely notice of allowance be issued in this case.

Respectfully submitted,

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April 9, 2001

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

The paragraph beginning at page 1, line 5, has been amended as follows:

This application is a divisional of U.S. Patent Application Serial No. 09/341,340, filed July 8, 1999 under 35 U.S.C. §371 as a national stage of international application No. PCT/US98/00639 filed January 15, 1998 which is a continuation-in-part application of United States Patent Application Serial No. 08/948,987 filed October 10, 1997, now U.S. Patent No. 5,916,670, issued June 29, 1999, which itself is a continuation-in-part application of United States Patent Application Serial No. 08/784,536 filed January 17, 1997 now U.S. Patent No. 5,866,242, issued February 2, 1999. The disclosures of [both] all three applications are incorporated herein by reference.

**IN THE SPECIFICATION:**

The paragraph beginning at page 5, line 2 has been amended as follows:

In one aspect, the present invention provides an absorbent material having a basis weight of from about 200 g/[cm<sup>2</sup>]m<sup>2</sup> to about 400 g/[cm<sup>2</sup>]m<sup>2</sup>, a density of from about 0.35 g/cc to about 0.40 g/cc and a ratio of Gurley Stiffness (mg) to density (g/cc) of less than about 3700. The material is airlaid as a bottom layer of pulp, a middle layer of pulp and superabsorbent material disposed in amongst the pulp, and a top layer of pulp. The pulp preferably has a Kappa value of less than about 100. In one embodiment, the absorbent material includes from about 40 weight percent to

about 90 weight percent cellulosic fibers and from about 10 weight percent to about 60 weight percent superabsorbent material. Such absorbent material has a water content of less than about 10 weight percent, a density of greater than about 0.25 g/cc, a ratio of Gurley Stiffness (mg) to density (g/cc) of less than about 3700 and a pad integrity of greater than about 12 Newtons.

The paragraph beginning at page 24, line 4 has been amended as follows:

Additional studies were performed using a 400 g/m<sup>2</sup> basis weight, 0.40 g/cc density, 40 weight percent superabsorbent material of the present invention (C11, C12 and C13) and the absorbent cores from commercially available Huggies® and Pampers® diapers; and commercial roll goods from [Merfin] Buckeye Absorbent Products (Delta, British Columbia, Canada)(Zorb Core Thermal Bond Product Code 44500) and Concert Fabrication LTEE (Thurso, Quebec, Canada)(Concert Product Code 280). The results of those studies are summarized below in Table 3.

The paragraph beginning at page 27, line 24 and extending to the end of Table 7 at line 32 of page 28, has been amended as follows:

45 Degree wicking absorption was determined using the procedures of Example 2. The following groups of samples were tested: (a) absorptive material of the present invention with a basis weight of about 400 g/m<sup>2</sup>, a density of about 0.4 g/cc, and varying superabsorbent material contents of about 15 weight percent (Sample

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C11), 28 weight percent (C12), 39 weight percent (C1) or 42 weight percent (C13);

(b) thermal bonded air-laid fluff obtained from Concert Fabrication LTEE (Concert

Fabrication LTEE Product Codes 500, 280, 130) or [Merfin (] Buckeye Absorbent

Products (Zorb Core Thermal Bond Product Code 44500); the absorbent core removed

from a Huggies® Diaper; and the absorbent core removed from a Pampers® diaper.

Samples C11, C12 and C13 were made using 100 percent cold caustic treated fibers.

Sample C1 was made using a blend of 50 percent cold caustic treated fibers and 50

percent non-cold caustic treated fibers. For each sample, the amount of fluid

absorbed per gram of sample was plotted against distance from the origin (source of

fluid). A representative plot is shown in FIG. 5. The area under the curve was

calculated using the following formula:

$$[(y_1)(x_2 - x_1) + 0.5 (y_2 - y_1)(x_2 - x_1) + (y_2)(x_3 - x_2) + 0.5 (y_3 - y_2)(x_3 - x_2) + \dots + (y_n)(x_n - x_{n-1}) + 0.5 (y_n - y_{n-1})(x_n - x_{n-1})]$$
, where  $X_i$  is distance at the  $i^{\text{th}}$  inch and  $Y_i$  is absorbency at the  $i^{\text{th}}$  inch.

This area was then multiplied by the gravitational constant ( $981 \text{ cm/s}^2$ ) and the sine of  $45^\circ$  to result in the work value of ergs/g. The derived energy value was normalized for superabsorbent material by dividing by percent superabsorbent material (%SAP) content. The results of these studies are summarized below in Table 7.

| Table 7                      |       |                               |                                    |                |
|------------------------------|-------|-------------------------------|------------------------------------|----------------|
| Sample                       | % SAP | Total Wicking Energy (ergs/g) | Normalized Wicking Energy (ergs/g) | Density (g/cc) |
| C 1                          | 39    | 161,299                       | 4,136                              | 0.38           |
| C 11                         | 15    | 143,295                       | 9,553                              | 0.36           |
| C 12                         | 28    | 152,509                       | 5,447                              | 0.36           |
| C 13                         | 42    | 162,200                       | 3,862                              | 0.38           |
| Concert 500                  | 45    | 93,016                        | 2,067                              | 0.12           |
| Concert 280                  | 30    | 67,216                        | 2,241                              | 0.17           |
| Concert 130                  | 18    | 56,219                        | 3,123                              | 0.13           |
| [Merfin]<br>Buckeye<br>44500 | 40    | 62,094                        | 1,552                              | 0.17           |
| Huggies®                     | 36    | 133,889                       | 3,719                              | 0.15           |
| Pampers®                     | 42    | 112,870                       | 2,625                              | 0.12           |

The Table 9, on page 31 between lines 6 and 21 has been amended as follows:

**Table 9**  
**Suppleness**

| <u>Sample</u>             |  | <u>% SAP</u> | <u>Suppleness</u><br>(g <sup>-1</sup> ) | Density<br>(g/cc) |
|---------------------------|--|--------------|---|-------------------|
| C1                        |  | 39           | 0.74                                    | 0.38              |
| C11                       |  | 15           | 0.792                                   | 0.36              |
| C12                       |  | 28           | 0.898                                   | 0.36              |
| C13                       |  | 42           | 1.235                                   | 0.38              |
| Concert 500               |  | 45           | 0.612                                   | 0.12              |
| Concert 280               |  | 30           | 1.429                                   | 0.17              |
| [Merfin]<br>Buckeye 44500 |  | 40           | 0.374                                   | 0.17              |
| Huggies®                  |  | 36           | 0.890                                   | 0.15              |
| Pampers®                  |  | 42           | 0.727                                   | 0.12              |

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The heading at page 33, line 1, has been amended as follows:

Example [11]10.

**IN THE CLAIMS:**

Claims 1-11, 15-17, 19, 20, 22-24, 26-29, 33, 36-38, 40-44, 46, 47, 49, and 50 have been canceled in this First Preliminary Amendment.

Claim 13 has been amended as follows:

13. (Amended) The material of [any of claims 1-12] claim 12 that has normalized drying power energy of at least about 6000 ergs/g.

Claim 14 has been amended as follows:

14. (Amended) The material of [any of claims 1-12] claim 12 at has normalized wicking energy of at least about 3000 ergs/g.

Claim 18 has been amended as follows:

18. (Amended) The material of [any of claims 3-17] claim 12 wherein the cellulosic fibers have a relative crystallinity of less than about 60 percent.

Claim 21 has been amended as follows:

21. (Amended) The material of [any of claims 3-17] claim 12 wherein at least some of the cellulosic fibers are obtained from pulp having a Kappa value of less than about 75.

Claim 25 has been amended as follows:

25. (Amended) The material of [any of claims 3-24] claim 12 wherein at least some of the cellulosic fibers have been made by a process that includes the step

of treating a liquid suspension of pulp at a temperature of from about 15°C to about 60°C with an aqueous alkali metal salt solution having an alkali metal salt concentration of from about 2 weight percent to about 25 weight percent of said solution for a period of time ranging from about 5 minutes to about 60 minutes.

Claim 30 has been amended as follows:

30. (Amended) The material of [any of claims 3-29] claim 12 having a basis weight of from about 100 g/m<sup>2</sup> to about 250 g/m<sup>2</sup>.

Claim 31 has been amended as follows:

31. (Amended) The material of [any of claims 3-29] claim 12 having a basis weight of from about 350 g/m<sup>2</sup> to about 450 g/m<sup>2</sup>.

Claim 32 has been amended as follows:

32. (Amended) The material of [any of claims 3-29] claim 12 having a density of from about 0.30 to about 0.45 g/cc.

Claim 34 has been amended as follows:

34. (Amended) The material of [any of claims 1-33] claim 12 that contains from about 20 to about 40 weight percent superabsorbent material.

Claim 35 has been amended as follows:

35. (Amended) The material of [any of claims 1-33] claim 12 that has normalized drying power energy of at least 7000 ergs/g.

Claim 39 has been amended as follows:

39. (Amended) The material of [any of claims 1-38] claim 12 that has normalized wicking energy of at least 3500 ergs/g.

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Claim 45 has been amended as follows:

45. (Amended) The material of [any of claims 1-44] claim 12 that has a suppleness of greater than about 0.8 g<sup>-1</sup>.

Claim 48 has been amended as follows:

48. (Amended) An absorbent article comprising the absorbent material of [any of claims 1-47] claim 12.